

IN THE ABSTRACT:

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In precision equipment such as semiconductor exposure apparatus, an inertial load is driven by using an actuator, and an actuator fixed to a structure such as a vibration isolation base, and apparatus mounted on the base, and a control force is applied to the structure by using a drive reaction force generated upon driving of the inertial load, thereby stably and quickly suppressing produced vibrations.

-- An active vibration suppression apparatus includes an actuator fixed to a vibration suppression target, an inertial load driven relative to the target by the actuator, and a driving system which drives the actuator based on a first signal corresponding to the vibration, generated or to be generated, of the target. The driving system includes a compensation unit which performs a compensation for the first signal. The compensation, separately or as a composite compensation includes (i) a linear compensation for the first signal to obtain a first compensated signal, and (ii) a nonlinear compensation for the first compensated signal to obtain a second compensated signal. A rate of a change in the second compensated signal to a change in an absolute value of the first compensated signal becoming less with an increase of the absolute value. --